SEQUENCE LISTING #10

<110> GIVER, LORRAINE J.
MINSHULL, JEREMY
VOGEL, KURT

<120> NOVEL LIPASE GENES

<130> 0184.310US

<140> US 09/905,666
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<150> 60/300,378
<151> 2001-06-21

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<170> PatentIn Ver. 2.1

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<213> Bacillus subtilis

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<212> DNA
<213> Bacillus megaterium

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<213> Bacillus lentus

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B1 Cont

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<213> Bacillus circulans

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<212> DNA
<213> Bacillus azotoformans

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cacggtatcg gaggagcttc atacaatttt gcgggaatta agagctatct cgtatctcag 180
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acaagcaagg cgcttccggg aacagatcca aatcaaaaga ttttatacac atccatttac 480
agcagtgcca atatgattgt catgaattac ttatcaaaat tagacggtgc taaaaacgta 540
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<210> 7
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<213> Bacillus firmus

<400> 7
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cacggtatcg gaggagcttc atacaatttt gcgggaatta agagctatct cgtatctcag 180
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<210> 8
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<212> DNA
<213> Bacillus badius

B1
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<210> 9
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<212> DNA
<213> Bacillus sp.

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<210> 10
<211> 639
<212> DNA
<213> Bacillus sp.

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<210> 11
<211> 648
<212> DNA
<213> Bacillus sp.

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B1 Cont

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<211> 648
<212> DNA
<213> Bacillus sp.

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ggctatatca aagaaggact gaatggcgga ggccaaaata caaattaa 648

<210> 13
<211> 648
<212> DNA
<213> Bacillus sp.

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gggtatatta aagaaggact gaacggcgga ggcctcaata caaattaa 648

<210> 14
<211> 639
<212> DNA
<213> Bacillus sp.

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B1 Cont

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<212> DNA
<213> Bacillus sp.

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<211> 639
<212> DNA
<213> Bacillus sp.

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<210> 17
<211> 639
<212> DNA
<213> Bacillus sp.

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B1 cont

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<211> 639
<212> DNA
<213> Bacillus sp.

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<210> 19

<211> 648
<212> DNA
<213> Bacillus sp.

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gtgatggtac atggtattgg aggagcgtct tataactttg cttcgattaa aagttatttg 180
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<210> 20
<211> 642
<212> DNA
<213> Bacillus sp.

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ctagatggcg gcgataaaat tgagaacgtt gtcacaattg gcggagcaaa cggactcgtt 420
tcaagcagag cattaccagg cacagatcca aatcaaaaaa ttctttacac atccgtctac 480
aagctcagcc gatctcattg tcgtcaacag tctctctcgt ttaattggct gcaagaaaca 540
gtccaaatcc atggcgttgg acatatcggt ctattaacct caagccaagt caaaggatat 600
attaaagaag gactgaacgg cgggggacta aatacaaatt aa 642

<210> 21
<211> 544
<212> DNA
<213> Artificial Sequence

B' Cont

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 21
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcgcgtt ttgtgaaaaa 180
ggtattagat gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggcggcgc 240
taacacgctt tactacataa aaaatctgga cggcggaaat aaagttgaaa acgtcgtaac 300
gcttggcggc acgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa atgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggac tcaatacgaa 540
ttga 544

<210> 22
<211> 544

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 22
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatctagat tcgtcaaaga 180
tgtgctagac aaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggac tcaatacgaa 540
ttga 544

<210> 23
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 23
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacagg acagggacga attataacaa tggcccggta ttatcacgat ttgtgaaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggacattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacggcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat ccatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggac tgaatacaaa 540
ttga 544

B1 cont

<210> 24
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 24
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggcgcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacggcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgtacaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggac tcaatacgaa 540

ttga 544

<210> 25
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 25
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggcggcgc 240
gaacacactt tactacataa aaaatttgga tggcggtaat aaaattgaaa acgtcgtcac 300
cattggtgga gcaaacggac tcgtttcaag cagagcatta ccaggcacag atccaaatca 360
aaaaattctt tacacatccg tctatagctc agcagatctt attgtcgtca acagtctctc 420
tcgtttaatt ggcgcaagaa acgtccaaat ccatggcgtt ggacatatcg gtctattaac 480
ctcaagccaa gtcaaaggat atattaaaga agggcttaac ggcgggggcc acaatacgaa 540
ttga 544

<210> 26
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 26
tgaacacaat ccagttgtta tggttcacgg tatcggagga gcttcataca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaaccggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag cagggcgctt ccggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgtacaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaaaggat atattaaaga aggactgaac ggcggaggcc taaatacgaa 540
ttga 544

B1 Cont

<210> 27
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 27
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca gttttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatc cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttggac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagta tgggtggcgc 240

gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggtactg atccaaccca 360
aaagatcttg tacacatccg tttacagtag tgctgatatg attgttatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc taaatacaaa 540
ttga 544

<210> 28
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 28
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca gttttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttggac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagta tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggtactg atccaaccca 360
aaagatcttg tacacatccg tttacagtag tgctgatatg attgttatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc taaatacaaa 540
ttga 544

<210> 29
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 29
tgaacacaat ccagttgtta tggttcacgg tatcggagga gcttcataca gttttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaacag atccaaccca 360
aaagatcttg tacacatccg tttacagtag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat tcatggtgtc ggacatatcg gccttctgta 480
cagcagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc aaaatacaaa 540
ttga 544

31 cont

<210> 30
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 30
tgaacacaat ccagttgtta tggttcacgg tatcggagga gcttcataca gtttttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaactg atcccaacca 360
aaagatcttg tacacatccg tttacagtag tgctgatatg attgttatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat tcatggcgtt gggcacactg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc acaatacaaa 540
ttga 544

<210> 31
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 31
tgaacacaat ccagttgtta tggttcacgg tattggagga gcatcataca atttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtata cggttgattt 120
ttgggacaag acaggcacaa attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaatcgtc ttgtaacagg caaggcgctt ccgggaacag atcccaatca 360
aaagattttg tacgcatccg tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc tgaatacaaa 540
ttga 544

<210> 32
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

B1 Cont

<400> 32
tgaacacaat ccagtcgtta tggttcacgg tattggaggg gcatcattca atttgcggg 60
aattaggagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacagg acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagat gaaaccggtg cgaaaaaagt ggacattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat ccatggcgtt ggacacatcg gccttctgta 480
cagcagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc tcaatacgaa 540
ttga 544

<210> 33
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 33
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca atttgcggg 60
aattaggagc tatctcgtat ctcagggctg gtcacgggc aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaaccggtg cgaaaaaagt ggacattgtc gctcacagca tgggcggcgc 240
taacacgctt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc acgaaccgtt tgacgacaag cagggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaactagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggac tcaatacgaa 540
ttga 544

<210> 34
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 34
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca atttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcgggac aagccgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac aaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaagttgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggac tcaatacgaa 540
ttga 544

<210> 35
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 35
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca atttgcggg 60
aattaagagc tatctcgtgt ctcagggctg gccgcgggac aagctgtatg cagttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaagttgaaa gcgtcgtaac 300
acttggcggc gcgaatcgtc ttgtaacagg caaggcgctt ccgggaactg atcccaacca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtc ggacatatcg gccttctgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc acaatacaaa 540
ttga 544

<210> 36
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 36
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca gttttgcggg 60
aattaggagc tatctcgtat ctcagggctg gccgcgggac aagctgtatg cggttgattt 120
ttgggacaag acaggcacaa attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggatattgtc gcccacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaagttgaaa acgtcgtgac 300
gcttggcggc gccaaccgtt tgacgacagg caaggcgctt ccgggtactg atcccaatca 360
aaagatttta tacacatccg tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacaggc tgattaaaga aggactgaac ggcggaggcc acaatacaaa 540
ttga 544

<210> 37
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 37
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca gttttgcggg 60
aattaggagc tatctcgtat ctcagggctg gccgcgggac aagctgtatg cggttgattt 120
ttgggacaag acaggcacaa attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggatattgtc gcctacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaagttgaaa acgtcgtgac 300
gcttggcggc gccaaccgtt tgacgacagg caaggcgctt ccgggtactg atcccaatca 360
aaagatttta tacacatccg tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacaggc tgattaaaga aggactgaac ggcggaggcc acaatacaaa 540
ttga 544

<210> 38
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 38
tgaacacaat ccagttgtta tggttcacgg tatcgggggg gcatcattca gttttgcggg 60
aattaggagc tatctcgtat ctcagggctg gccgcgggac aagctgtatg cggttgattt 120
ttgggacaag acaggcacaa attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggatattgtc gcccacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaagttggaa acgtcgtgac 300
gcttggcggc gccaaccgtt tgacgacagg caaggcgctt ccgggtactg atcccaatca 360

aaagatttta tacacatccg tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacaggc tgattaaaga aggactgaac ggcggaggcc acaatacaaa 540
ttga 544

<210> 39
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 39
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca gttttgcggg 60
aattaggagc tatctcgtat cccagggctg gccgcgggac aagctgtatg cggttgattt 120
ttgggacaag acaggcacaa attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggatattgtc gcccacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaagttgaaa acgtcgtgac 300
gcttggcggc gccaaccgtt tgacgacagg caaggcgctt ccgggtactg atcccaatca 360
aaagatttta tacacatccg tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacaggc tgattaaaga aggactgaac ggcggaggcc acaatacaaa 540
ttga 544

<210> 40
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 40
tgaacacaat ccagttgtta tggttcacgg tattggaggg acatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacgggac aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggcggcgc 240
caacacgctt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtgac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc acaatacaaa 540
ttga 544

<210> 41
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 41
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca gttttgcggg 60

aattaagagc tatctcgtat ctcagggctg gtcgcgggac aagctgtatg cagttgattt 120
tagtgacaaa acaggcacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgc 240
gaacacactt tactacataa aaaatctgga tggcggtaat aaaattgaaa acgtcgtaac 300
acttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggtactg atcccaacca 360
aaagatcttg tacacatcca tttacagcag tgccgatatg gttgtcatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat tcatggtgtc gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc acaatacgaa 540
ttga 544

<210> 42
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 42
taaacacaat ccagttgtta tggttcacgg tattggaggg gcatcataca atttgcggg 60
aataaagagc tatctcgtat ctcagggctg gtcgcgggac aagctgtatg cagttgattt 120
tagtgacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgc 240
gaacacactt tactacataa aaaatctgga cggcggtaat aaaattgaaa acgtcgtaac 300
acttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaactagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggat taaatacgaa 540
ttga 544

<210> 43
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 43
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca atttgcggg 60
aattaagagc tatctcgaat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacaag accgggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggctttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt tgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat ccatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc agaatacgaa 540
ttga 544

<210> 44
<211> 544
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 44
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacagg acagggacga attataacaa tggcccggta ttatcacgat ttgtgaaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtcac 300
acttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga agggctgaac ggcggaggcc agaatacgaa 540
ttga 544

<210> 45
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 45
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcggggc aagctgtatg cggttgattt 120
ttgggacagg acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtcac 300
acttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga agggcttaac ggcgggggcc acaatacgaa 540
ttga 544

<210> 46
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 46
tgaacacaat ccagtcgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aataaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
ttgggacagg acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa agaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attgcttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc agaatacgaa 540
ttga 544

<210> 47

<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 47
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcgttca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcgggac aagctgtatg cagttgattt 120
caaagacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgaaaaa 180
ggtattagat gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggcggcgc 240
taacacgctt tactacataa agaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggtactg atcccaacca 360
aaagatcttg tacacatccg tttacagtag tgctgatatg attgttatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcggaggcc taaatacaaa 540
ttga 544

<210> 48
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 48
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca atttgcgggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcgggac aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgaaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
taacacgctt tactacataa aaaatctgga cggcggcgat aaaattgaga acgtcgtaac 300
acttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatcttg tacacatccg tttacagtag tgctgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga agggctgaac ggcggaggcc agaatacgaa 540
ttga 544

<210> 49
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 49
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcgggac aagctgtatg cagttgattt 120
ttggggcaag acagggacga attataacaa tggcccggta ttatcgcgtt ttgtgaaaaa 180
ggtattagat gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggggcgcc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
acttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggggctaaaa atgttcaaat tcatggcgtt gggcacattg gtttattgat 480

gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcggaggcc aaaatacgaa 540
ttga 544

<210> 50
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 50
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cagttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcgcgtt ttgtgaaaaa 180
ggtattagat gaaacgggtg cgaaaaaagt ggatattgtc gcttcacagca tgggcggcgc 240
taacacgctt tactacataa aaaatctgga tggcggtaat aaaattgaaa acgtcgtcac 300
acttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaactg atcccaacca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcggaggcc aaaatacgaa 540
ttga 544

<210> 51
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 51
tgaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacggggc aagctgtatg cggttgattt 120
caaggacaag acaggcacaa attataacaa tggcccggta ttatcacgat ttgtgaaaaa 180
ggtattagat gaaaccggtg cgaaaaaagt ggatattgtc gcttcacagca tgggcggcgc 240
taacacgctt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggtactg atcccaacca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga agggcttaac ggcgggggcc agaatacgaa 540
ttga 544

<210> 52
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 52
taaacacaat ccagttgtta tggttcacgg tattggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcgggac gagctgtatg cggttgattt 120
ttgggacgag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180

ggttttagac gaaaccggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
gcttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggtacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa atgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga agggctgaac ggcggaggcc aaaatacgaa 540
ttga 544

<210> 53
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 53
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcgcgggac aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaagttgaaa acgtcgtaac 300
acttggcggc gcgaatcgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa acgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga aggactgaac ggcgggggcc aaaatacaaa 540
ttga 544

<210> 54
<211> 544
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 54
tgaacacaat ccagttgtta tggttcacgg tatcggaggg gcatcattca attttgcggg 60
aattaagagc tatctcgtat ctcagggctg gtcacgggac aagctgtatg cggttgattt 120
ttgggacaag acagggacga attataacaa tggcccggta ttatcacgat ttgtgcaaaa 180
ggttttagac gaaacgggtg cgaaaaaagt ggatattgtc gctcacagca tgggtggcgc 240
gaacacactt tactacataa aaaatctgga cggcggaaat aaaattgaaa acgtcgtaac 300
acttggcggc gcgaaccgtt cgacgacaag caaggcgctt ccgggaacag atccaaatca 360
aaagatttta tacacatcca tttacagcag tgccgatatg attgtcatga attacttatc 420
aaaattagac ggtgctaaaa atgttcaaat tcatggcgtt gggcacattg gtttattgat 480
gaacagccaa gtcaacagcc tgattaaaga agggctgaac ggcggaggac aaaatacaaa 540
ttga 544

<210> 55
<211> 212
<212> PRT
<213> Bacillus pumilus

<400> 55
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Val
1 5 10 15

```
Leu Ser Val Thr Ser Leu Phe Ala Met Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Pro Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
                165                 170                 175

Ala Lys Asn Ala Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
            180                 185                 190

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

Gln Asn Thr Asn
    210
```

<210> 56
<211> 212
<212> PRT
<213> Bacillus subtilis

```
<400> 56
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
 65                  70                  75                  80
```

```
Asn Asn Gly Pro Val Leu Pro Arg Phe Val Gln Lys Val Leu Asp Glu
                  85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
             100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Ala
         115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly Lys Ala
     130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Ile Asn Tyr Leu Ser Arg Leu Asp Gly
                165                 170                 175

Ala Arg Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Tyr
             180                 185                 190

Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
         195                 200                 205

Leu Asn Thr Asn
     210
```

<210> 57
<211> 212
<212> PRT
<213> Bacillus megaterium

```
<400> 57
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Val
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Met Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Asp Thr Ile Gln Leu Leu Trp Phe Thr Gly Ile Gly Gly Ala Ser Tyr
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
             100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
         115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
     130                 135                 140
```

```
Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
                165                 170                 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
            180                 185                 190

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

His Asn Thr Asn
    210
```

<210> 58
<211> 212
<212> PRT
<213> Bacillus lentus

```
<400> 58
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Val
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Met Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
                85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
                165                 170                 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
            180                 185                 190

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205
```

Leu Asn Thr Asn
210

<210> 59
<211> 212
<212> PRT
<213> Bacillus circulans

<400> 59
Met Lys Phe Ile Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Val
1 5 10 15

Leu Ser Val Thr Ser Leu Phe Ala Met Gln Pro Ser Ala Lys Ala Ala
20 25 30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
35 40 45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
50 55 60

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
65 70 75 80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
85 90 95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
100 105 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
115 120 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
130 135 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145 150 155 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
165 170 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
180 185 190

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
195 200 205

Leu Asn Thr Asn
210

<210> 60
<211> 212
<212> PRT
<213> Bacillus azotoformans

<400> 60
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Val

```
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Met Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Gly Glu Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asn Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
                165                 170                 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
            180                 185                 190

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

Leu Asp Thr Asn
    210
```

<210> 61
<211> 212
<212> PRT
<213> Bacillus firmus

<400> 61

```
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Val
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Met Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
```

```
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
                165                 170                 175

Ala Lys Asn Ala Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
            180                 185                 190

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

His Asn Thr Asn
    210


<210> 62
<211> 212
<212> PRT
<213> Bacillus badius

<400> 62
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Val
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Met Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
```

```
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
                165                 170                 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
            180                 185                 190

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

His Asn Thr Asn
    210
```

<210> 63
<211> 212
<212> PRT
<213> Bacillus sp.

<400> 63

```
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Lys Asp Lys Thr Gly Thr Asn Tyr
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly Lys Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu Asp Gly
                165                 170                 175

Ala Arg Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Tyr
            180                 185                 190

Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
```

```
        195                 200                 205

Leu Asn Thr Asn
    210


<210> 64
<211> 212
<212> PRT
<213> Bacillus sp.

<220>
<221> MOD_RES
<222> (73)
<223> Variable amino acid

<400> 64
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Xaa Asp Lys Thr Gly Asn Asn Arg
 65                  70                  75                  80

Asn Asn Gly Pro Arg Leu Ser Arg Phe Val Lys Asp Val Leu Asp Lys
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Ile Gly Gly Ala Asn Gly Leu Val Ser Ser Arg Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
145                 150                 155                 160

Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Arg Leu Ile Gly
                165                 170                 175

Ala Arg Asn Ile Leu Ile His Gly Val Gly His Ile Gly Leu Leu Thr
            180                 185                 190

Ser Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

Leu Asn Thr Asn
    210


<210> 65
```

<211> 215
<212> PRT
<213> Bacillus sp.

<400> 65
Met Lys Val Ile Phe Val Lys Lys Arg Ser Leu Gln Ile Leu Val Ala
1 5 10 15

Leu Ala Leu Val Leu Gly Ser Ile Ala Phe Ile Gln Pro Lys Glu Ala
20 25 30

Lys Ala Ala Glu His Asn Pro Val Val Met Val His Gly Met Gly Gly
35 40 45

Ala Ser Tyr Asn Phe Ala Ser Ile Lys Arg Tyr Leu Val Ser Gln Gly
50 55 60

Trp Asp Gln Asn Gln Leu Phe Ala Ile Asp Phe Ile Asp Lys Thr Gly
65 70 75 80

Asn Asn Leu Asn Asn Gly Pro Arg Leu Ser Arg Phe Val Lys Asp Val
85 90 95

Leu Ala Lys Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met
100 105 110

Gly Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp
115 120 125

Lys Ile Glu Asn Val Val Thr Leu Gly Gly Ala Asn Gly Leu Val Ser
130 135 140

Leu Arg Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr
145 150 155 160

Ser Val Tyr Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Arg
165 170 175

Leu Ile Gly Ala Arg Asn Val Leu Ile His Gly Val Gly His Ile Gly
180 185 190

Leu Leu Thr Ser Ser Gln Val Lys Gly Tyr Val Lys Glu Gly Leu Asn
195 200 205

Gly Gly Gly Gln Asn Thr Asn
210 215

<210> 66
<211> 215
<212> PRT
<213> Bacillus sp.

<400> 66
Met Lys Val Ile Phe Val Lys Lys Arg Ser Leu Gln Ile Leu Val Val
1 5 10 15

Leu Ala Leu Val Met Gly Ser Met Ala Phe Ile Gln Pro Lys Glu Ile
20 25 30

Arg Ala Ala Glu His Asn Pro Val Val Met Val His Gly Met Gly Gly

```
         35                  40                  45

Ala Ser Tyr Asn Phe Ala Ser Ile Lys Ser Tyr Leu Val Ser Gln Gly
     50                  55                  60

Trp Asp Arg Asn Gln Leu Phe Ala Ile Asp Phe Ile Asp Lys Thr Gly
 65                  70                  75                  80

Asn Asn Arg Asn Asn Gly Pro Arg Leu Ser Arg Phe Val Lys Asp Val
                 85                  90                  95

Leu Ala Lys Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met
            100                 105                 110

Gly Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp
        115                 120                 125

Lys Ile Glu Asn Val Val Thr Leu Gly Gly Ala Asn Gly Leu Val Ser
    130                 135                 140

Leu Arg Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr
145                 150                 155                 160

Ser Val Tyr Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Arg
                165                 170                 175

Leu Ile Gly Ala Arg Asn Val Leu Ile His Gly Val Gly His Ile Gly
            180                 185                 190

Leu Leu Ala Ser Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn
        195                 200                 205

Gly Gly Gly Gln Asn Thr Asn
    210                 215
```

<210> 67
<211> 215
<212> PRT
<213> Bacillus sp.

<400> 67

```
Met Lys Val Ile Phe Val Lys Lys Arg Ser Leu Gln Ile Leu Ile Ala
  1               5                  10                  15

Leu Ala Leu Val Ile Gly Ser Met Ala Phe Ile Gln Pro Lys Glu Ala
             20                  25                  30

Lys Ala Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly
         35                  40                  45

Ala Ser Tyr Asn Phe Phe Ser Ile Lys Ser Tyr Leu Ala Thr Gln Gly
     50                  55                  60

Trp Asp Arg Asn Gln Leu Tyr Ala Ile Asp Phe Ile Asp Lys Thr Gly
 65                  70                  75                  80

Asn Asn Arg Asn Asn Gly Pro Arg Leu Ser Arg Phe Val Lys Asp Val
                 85                  90                  95

Leu Asp Lys Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met
```

```
            100                 105                 110

Gly Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp
        115                 120                 125

Lys Ile Glu Asn Val Val Thr Ile Gly Gly Ala Asn Gly Leu Val Ser
    130                 135                 140

Ser Arg Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr
145                 150                 155                 160

Ser Val Tyr Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Gln
                165                 170                 175

Phe Asn Trp Arg Lys Lys His Pro Asp Pro Gly Val Gly His Ile Gly
            180                 185                 190

Leu Leu Thr Ser Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn
        195                 200                 205

Gly Gly Gly Leu Asn Thr Asn
    210                 215


<210> 68
<211> 212
<212> PRT
<213> Bacillus sp.

<400> 68
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Arg Asp Lys Thr Gly Asn Asn Leu
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Val Thr Gly Lys Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Thr Lys Leu Asp Gly
```

```
                165                 170                 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Tyr
            180                 185                 190

Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

Leu Asn Thr Asn
    210
```

<210> 69
<211> 212
<212> PRT
<213> Bacillus sp.

<400> 69

```
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Asn Asn Leu
 65                  70                  75                  80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Val Thr Gly Lys Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
145                 150                 155                 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
                165                 170                 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Tyr
            180                 185                 190

Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

Leu Asn Thr Asn
    210
```

<210> 70
<211> 212
<212> PRT
<213> Bacillus sp.

<400> 70
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
1 5 10 15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
20 25 30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
35 40 45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
50 55 60

Asp Lys Leu Tyr Ala Val Asp Phe Ser Asp Lys Thr Gly Asn Asn Leu
65 70 75 80

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
85 90 95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
100 105 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
115 120 125

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Val Thr Gly Lys Ala
130 135 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
145 150 155 160

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
165 170 175

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Tyr
180 185 190

Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
195 200 205

Leu Asn Thr Asn
210

<210> 71
<211> 212
<212> PRT
<213> Bacillus sp.

<400> 71
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
1 5 10 15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
20 25 30

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Lys Asp Lys Thr Gly Asn Asn Arg
 65                  70                  75                  80

Asn Asn Gly Pro Arg Leu Ser Arg Phe Val Lys Asp Val Leu Asp Lys
                 85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Ile Gly Gly Ala Asn Gly Leu Val Ser Ser Arg Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
145                 150                 155                 160

Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Arg Leu Ile Gly
                165                 170                 175

Ala Arg Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Thr
            180                 185                 190

Ser Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

Leu Asn Thr Asn
    210
```

<210> 72
<211> 212
<212> PRT
<213> Bacillus sp.

<400> 72

```
Met Lys Phe Val Lys Arg Arg Ile Leu Ala Leu Val Thr Ile Leu Met
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Ile Asp Lys Thr Gly Asn Asn Arg
 65                  70                  75                  80

Asn Asn Gly Pro Arg Leu Ser Arg Phe Val Lys Asp Val Leu Asp Lys
                 85                  90                  95
```

```
Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Ile Gly Gly Ala Asn Gly Leu Val Ser Ser Arg Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
145                 150                 155                 160

Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Arg Leu Ile Gly
                165                 170                 175

Ala Arg Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Thr
            180                 185                 190

Ser Ser Leu Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn Gly Gly Gly
        195                 200                 205

Gln Asn Thr Asn
    210
```

<210> 73
<211> 215
<212> PRT
<213> Bacillus sp.

<400> 73

```
Met Lys Val Ile Phe Val Lys Lys Arg Ser Leu Gln Ile Leu Val Ala
  1               5                  10                  15

Leu Ala Leu Val Ile Gly Ser Met Ala Phe Ile Gln Pro Lys Glu Ile
            20                  25                  30

Lys Ala Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly
        35                  40                  45

Ala Ser Tyr Asn Phe Ala Ser Ile Lys Ser Tyr Leu Val Asn Gln Gly
    50                  55                  60

Trp Asp Arg Asn Gln Leu Phe Ala Ile Asp Phe Ile Asp Lys Thr Gly
65                  70                  75                  80

Asn Asn Arg Asn Asn Gly Pro Arg Leu Ser Arg Phe Val Lys Asp Val
                85                  90                  95

Leu Asp Lys Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met
            100                 105                 110

Gly Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp
        115                 120                 125

Lys Ile Glu Asn Val Val Thr Ile Gly Gly Ala Asn Gly Leu Val Ser
    130                 135                 140

Leu Arg Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr
145                 150                 155                 160
```

```
Ser Val Tyr Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Arg
                165                 170                 175

Leu Thr Gly Ala Arg Asn Val Leu Ile His Gly Val Gly His Ile Gly
            180                 185                 190

Leu Leu Thr Ser Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn
        195                 200                 205

Gly Gly Gly Leu Asn Thr Asn
    210                 215
```

<210> 74
<211> 213
<212> PRT
<213> Bacillus sp.

<400> 74

```
Met Lys Phe Val Lys Arg Arg Ile Ile Ala Leu Val Thr Ile Leu Met
  1               5                  10                  15

Leu Ser Val Thr Ser Leu Phe Ala Leu Gln Pro Ser Ala Lys Ala Ala
             20                  25                  30

Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
         35                  40                  45

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
     50                  55                  60

Asp Lys Leu Tyr Ala Val Asp Phe Arg Asp Lys Thr Gly Asn Asn Arg
 65                  70                  75                  80

Asn Asn Gly Pro Arg Leu Ser Lys Phe Val Lys Asp Val Leu Asp Lys
                85                  90                  95

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
            100                 105                 110

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp Lys Ile Glu
        115                 120                 125

Asn Val Val Thr Ile Gly Gly Ala Asn Gly Leu Val Ser Ser Arg Ala
    130                 135                 140

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
145                 150                 155                 160

Lys Leu Ser Arg Ser His Cys Arg Gln Gln Ser Leu Ser Phe Asn Trp
                165                 170                 175

Leu Gln Glu Thr Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu
            180                 185                 190

Thr Ser Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn Gly Gly
        195                 200                 205

Gly Leu Asn Thr Asn
    210
```

<210> 75
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 75
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Thr Asn Arg Ser Thr Thr Ser Lys Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

Leu Asn Thr Asn
180

<210> 76
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 76
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

```
Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Asp Val Leu Asp Lys
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Leu Asn Thr Asn
            180
```

<210> 77
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 77

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Arg Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95
```

```
Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Gly Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Leu Asn Thr Asn
            180


<210> 78
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 78
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Gly Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
```

```
                165                 170                 175

Leu Asn Thr Asn
            180


<210> 79
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 79
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Ile Gly Gly Ala Asn Gly Leu Val Ser Ser Arg Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Leu Ile Val Val Asn Ser Leu Ser Arg Leu Ile Gly
    130                 135                 140

Ala Arg Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Thr
145                 150                 155                 160

Ser Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

His Asn Thr Asn
            180


<210> 80
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide
```

<400> 80
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Arg Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Lys Gly Tyr Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

Leu Asn Thr Asn
180

<210> 81
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 81
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

Ser Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Gly Lys Leu Tyr Pro Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
50 55 60

```
Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Leu Asn Thr Asn
            180
```

<210> 82
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 82

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Ser Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140
```

```
Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Leu Asn Thr Asn
            180


<210> 83
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 83
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
  1               5                  10                  15

Ser Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Tyr
145                 150                 155                 160

Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180


<210> 84
<211> 180
<212> PRT
```

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 84
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
1 5 10 15

Ser Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Thr Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

His Asn Thr Asn
180

<210> 85
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 85
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Gly Lys Leu Tyr Thr Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr

```
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Val Thr Gly Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Ala Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Leu Asn Thr Asn
            180
```

<210> 86
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 86

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Arg Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Arg Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
            100                 105                 110
```

```
Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Tyr
145                 150                 155                 160

Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Leu Asn Thr Asn
            180
```

<210> 87
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 87

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Arg Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Thr Asn Arg Leu Thr Thr Ser Arg Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Leu Asn Thr Asn
            180
```

<210> 88
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 88
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Asp Lys Pro Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Lys
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

Leu Asn Thr Asn
180

<210> 89
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 89
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

```
Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Pro Arg
            20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
        35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
    50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
                85                  90                  95

Ser Val Val Thr Leu Gly Gly Ala Asn Arg Leu Val Thr Gly Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

His Asn Thr Asn
            180


<210> 90
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 90
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Ser Phe Ala Gly Ile Arg Ser Tyr Leu Val Ser Gln Gly Trp Pro Arg
            20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
        35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
    50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
```

```
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Arg Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

His Asn Thr Asn
            180
```

<210> 91
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 91

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Ser Phe Ala Gly Ile Arg Ser Tyr Leu Val Ser Gln Gly Trp Pro Arg
             20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala Tyr Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160
```

```
Asn Ser Gln Val Asn Arg Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

His Asn Thr Asn
            180


<210> 92
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 92
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Ser Phe Ala Gly Ile Arg Ser Tyr Leu Val Ser Gln Gly Trp Pro Arg
             20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Gly
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Arg Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

His Asn Thr Asn
            180


<210> 93
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
```

peptide

<400> 93
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

Ser Phe Ala Gly Ile Arg Ser Tyr Leu Val Ser Gln Gly Trp Pro Arg
20 25 30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly Lys Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Arg Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

His Asn Thr Asn
180

<210> 94
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 94
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Thr Ser Phe
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
50 55 60

```
Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

His Asn Thr Asn
            180
```

<210> 95
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 95

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Ser Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Ser Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Val Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
```

B' Cont

130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

His Asn Thr Asn
180

<210> 96
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 96
Lys His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Tyr
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Asp Lys Leu Tyr Ala Val Asp Phe Ser Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

Leu Asn Thr Asn
180

<210> 97
<211> 180

B1 cont

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 97
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Glu Ser Gln Gly Trp Ser Arg
20 25 30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Ala Leu Asp Glu
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Ser Lys Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

Gln Asn Thr Asn
180

B1 Cont

<210> 98
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 98
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

```
Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Arg Thr Gly Thr Asn Tyr
          35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
      50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180
```

<210> 99
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

B1 Cont.

<400> 99

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Arg Thr Gly Thr Asn Tyr
          35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
      50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110
```

```
Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

His Asn Thr Asn
            180
```

<210> 100
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 100

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Arg Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Cys Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
```

B1 Cont

180

<210> 101
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 101
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
1 5 10 15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
20 25 30

Asp Lys Leu Tyr Ala Val Asp Phe Lys Asp Lys Thr Gly Thr Asn Tyr
35 40 45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
50 55 60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
65 70 75 80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
85 90 95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
100 105 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
115 120 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

B1 cont

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

Leu Asn Thr Asn
180

<210> 102
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 102
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe

```
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asp Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Val Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180
```

<210> 103
<211> 180
<212> PRT
<213> Artificial Sequence

B1 cont

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 103

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Gly Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80
```

```
Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180
```

<210> 104
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 104

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160
```

B1 Cont

```
Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180


<210> 105
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 105
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Lys Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Lys Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180


<210> 106
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
```

B1 Cont

<223> Description of Artificial Sequence: Synthetic peptide

<400> 106

```
Lys His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Asp Glu Leu Tyr Ala Val Asp Phe Trp Asp Glu Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180
```

B1 Cont

<210> 107
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 107

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
```

```
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
    130                 135                 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145                 150                 155                 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
                165                 170                 175

Gln Asn Thr Asn
            180
```

<210> 108
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 108

```
Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe
  1               5                  10                  15

Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg
             20                  25                  30

Gly Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr
         35                  40                  45

Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu Asp Glu
     50                  55                  60

Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly Gly Ala
 65                  70                  75                  80

Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Ile Glu
                 85                  90                  95

Asn Val Val Thr Leu Gly Gly Ala Asn Arg Ser Thr Thr Ser Lys Ala
            100                 105                 110

Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser Ile Tyr
        115                 120                 125
```

B1 Cont

Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Lys Leu Asp Gly
130 135 140

Ala Lys Asn Val Gln Ile His Gly Val Gly His Ile Gly Leu Leu Met
145 150 155 160

Asn Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly Gly
165 170 175

Gln Asn Thr Asn
180

<210> 109
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 109
Asp His Asn Pro Val Ile Met Val His Gly Met Gly Gly Ala Ser Tyr
1 5 10 15

Asn Phe Ala Gly
20

<210> 110
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

B1 cont

<400> 110
Asp His Gln Pro Val Val Val Val His Gly Ile Gly Gly Ser Ser Phe
1 5 10 15

Asn Phe Ser Gly
20

<210> 111
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucletide

<400> 111
gagcataacc ccgtg 15